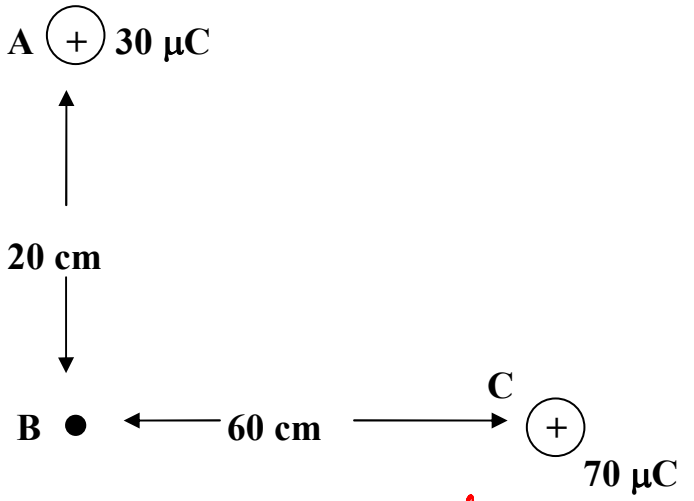
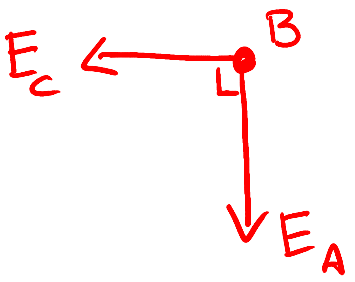
**Example 8. Find the resultant field at point B due to the two charges.**




First: draw a vectors diagram of the field lines at B:




Next: calculate E due to each charge:

$$E_A = \frac{(9\times10^9)(30\times10^{-6})}{.20^2}$$

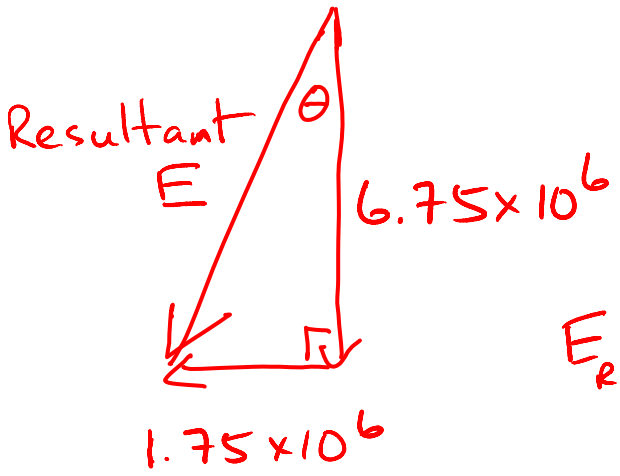
$$= 6.75\times10^6 \text{ N/C} \downarrow$$

$$E_C = \frac{(9\times10^9)(70\times10^{-6})}{.60^2}$$

$$= 1.75\times10^6 \text{ N/C} \leftarrow$$

continued on next page . . .

Now draw the vector-sum of the two field lines:




$$E_R = \sqrt{(1.75\times10^6)^2 + (6.75\times10^6)^2}$$

$$= 6.97\times10^6 \text{ N/C}$$

$$\theta = \tan^{-1}\left[\frac{1.75}{6.75}\right] = 14.5^\circ$$

$$\therefore \boxed{E = 7.0\times10^6 \text{ N/C} \text{ @ } 15^\circ \text{ from line A-B}}$$